

FIG. 1A

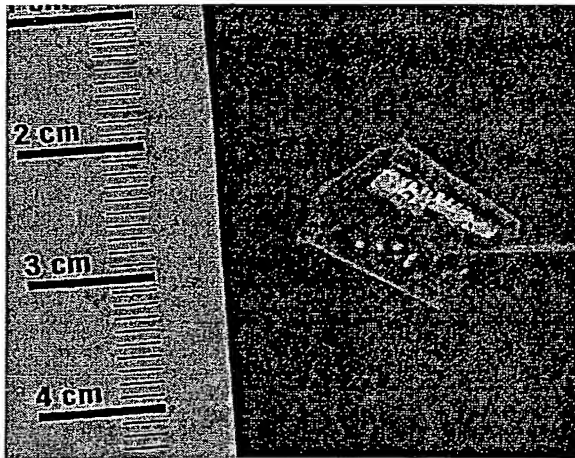


FIG. 1B

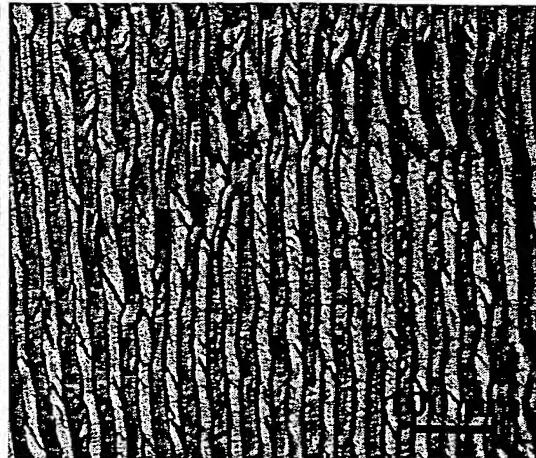


FIG. 1C

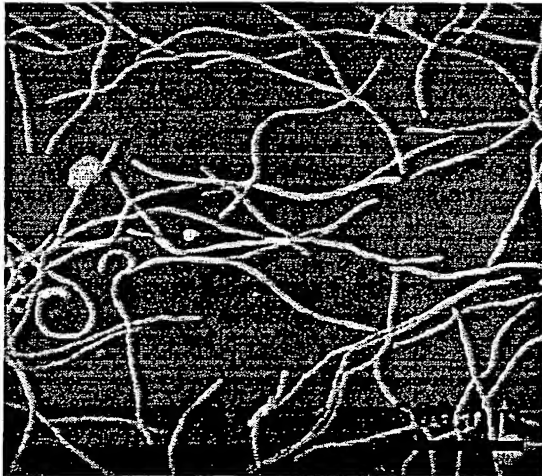
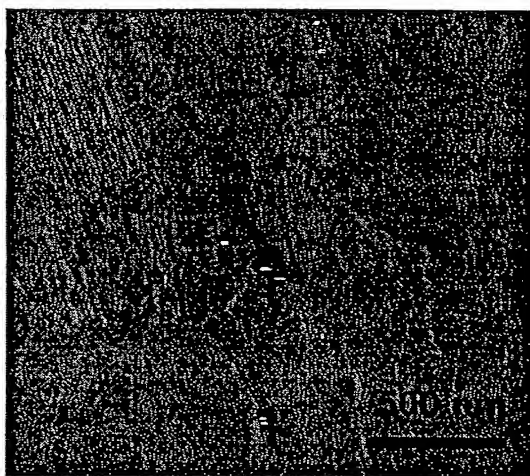


FIG. 1D



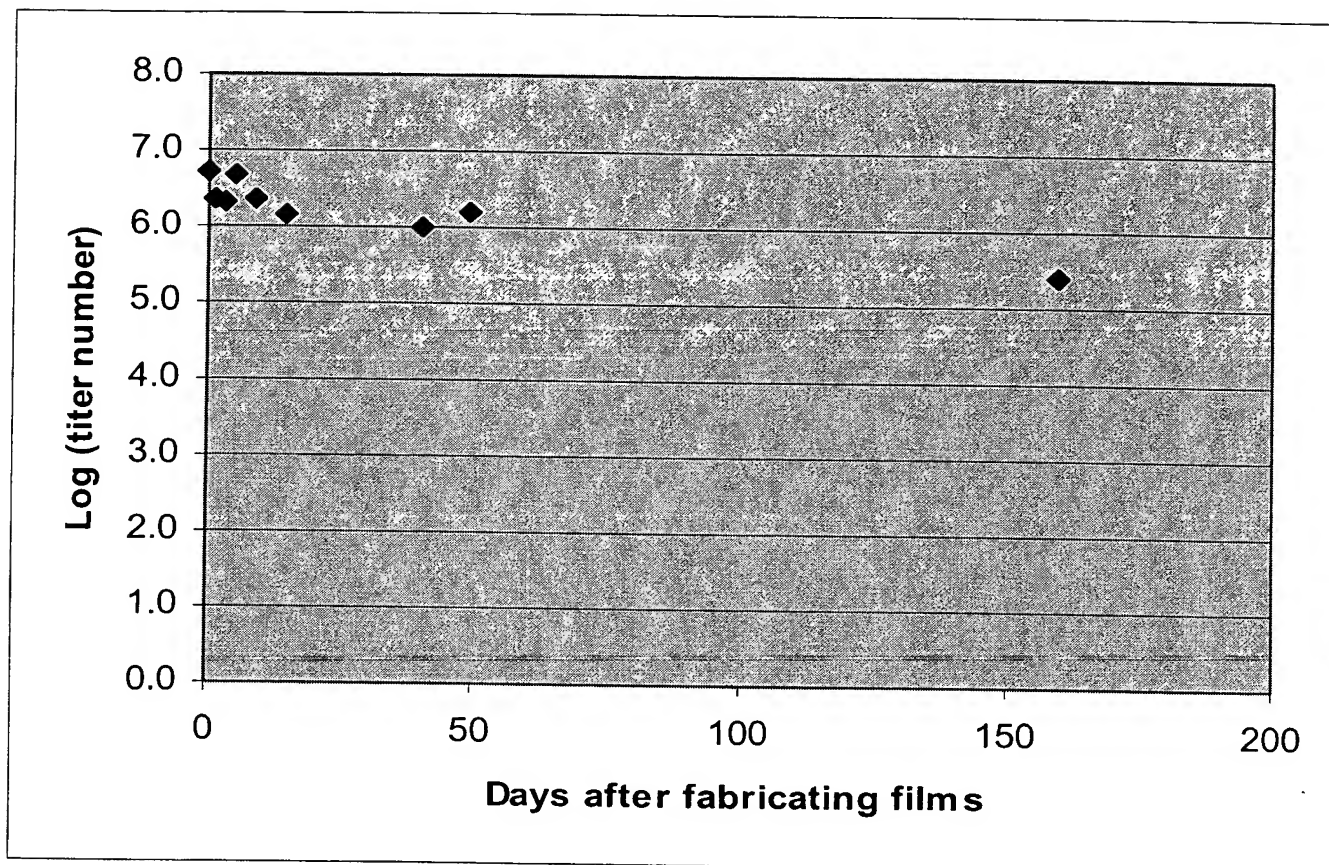


FIG. 2

G13-5	A M A G T T S D P S T V	SEQ ID NO.: 1
G12-5	P A Q S M S Q T P S A A	SEQ ID NO.: 2
G12-3	H T H T N N D S P N Q A	SEQ ID NO.: 3
G1-4		
G12-4		
G14-3		
G7-4		
G15-5		
G14-4		
G11-3		
G1-3		

FIG. 3

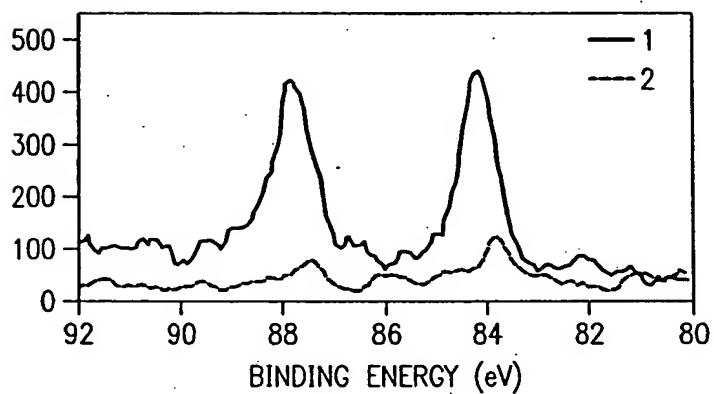


FIG. 4 A

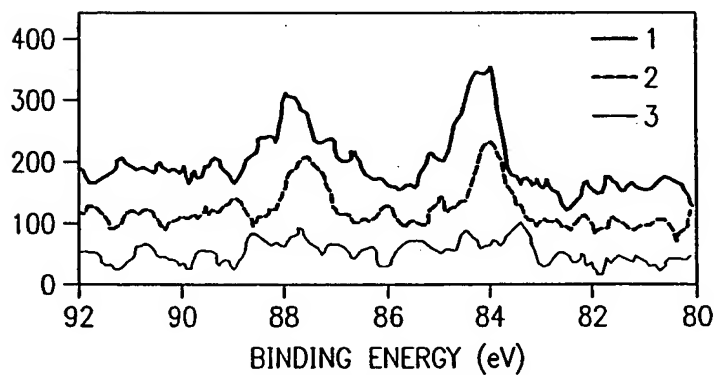


FIG. 4 B

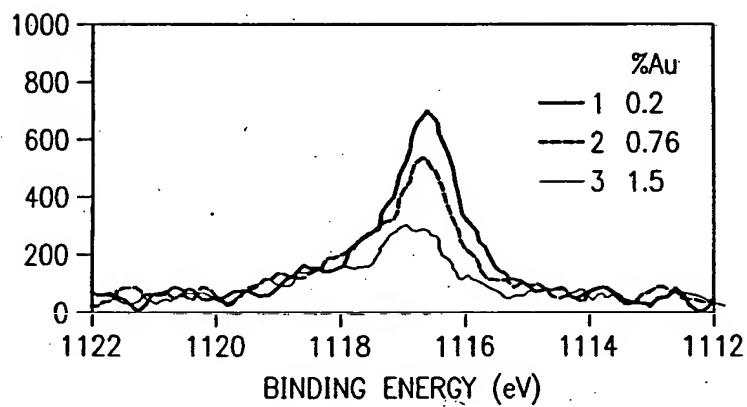


FIG. 4 C

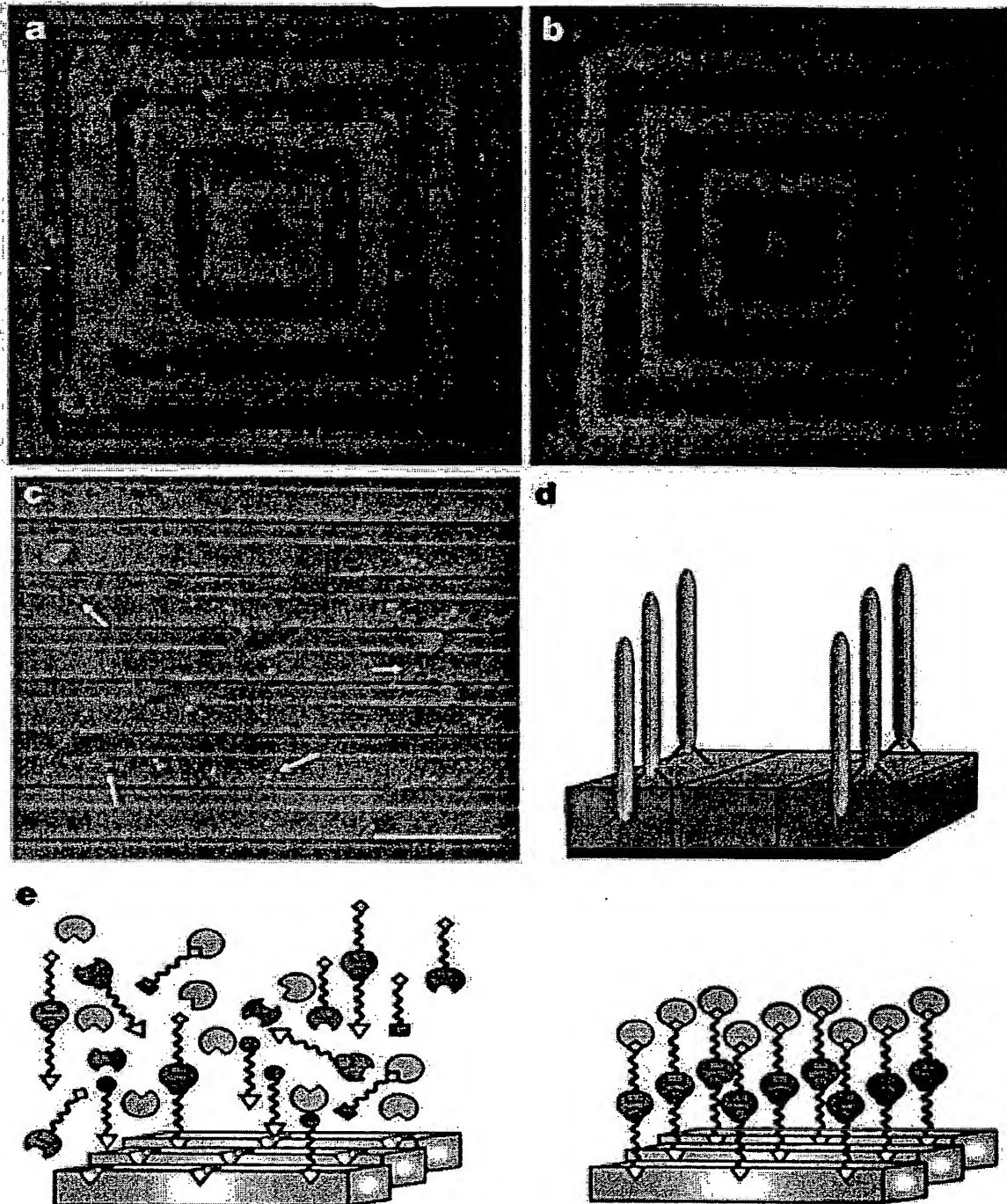


FIG. 5

**CdS Single Crystal**  
**12-mer library (N to C terminus)**

CEF-81	E1	C	H	A	S	N	R	L	S	C							SEQ ID NO.:12
CEF-82	E2	C	H	A	S	N	R	L	S	C							SEQ ID NO.:12
CEF-83	E3	C	H	A	S	N	R	L	S	C							SEQ ID NO.:12
CEF-84	E4	C	H	A	S	N	R	L	S	C							SEQ ID NO.:12
CEF-85	E5	C	H	A	S	N	R	L	S	C							SEQ ID NO.:12
CEF-86	E6	C	H	A	S	N	R	L	S	C							SEQ ID NO.:12
CEF-88	E8	C	H	A	S	N	R	L	S	C							SEQ ID NO.:12
CEF-89	E9	C	H	A	S	N	R	L	S	C							SEQ ID NO.:12
CEF-90	E10	C	H	A	S	N	R	L	S	C							SEQ ID NO.:12
CEF-91	E11	C	H	A	S	N	R	L	S	C							SEQ ID NO.:12
CEF-92	E12	C	H	A	S	N	R	L	S	C							SEQ ID NO.:12
CEF-159	E13	S	M	D	R	S	D	M	T	M	R	L	P				SEQ ID NO.:13
CEF-160	E14	G	T	F	T	P	R	P	T	P	I	Y	P				SEQ ID NO.:14
CEF-161	E15	Q	M	S	E	N	L	T	S	Q	I	E	S				SEQ ID NO.:15
CEF-162	E16	D	M	L	A	R	L	R	A	T	A	G	P				SEQ ID NO.:16
CEF-163	E18	S	Q	T	W	L	L	M	S	P	V	A	T				SEQ ID NO.:17
CEF-164	E19	A	S	P	D	Q	Q	V	G	P	L	Y	V				SEQ ID NO.:18
CEF-165	E20	L	T	W	S	P	L	Q	T	V	A	R	F				SEQ ID NO.:19
CEF-166	E21	Q	I	S	A	H	Q	M	P	S	R	P	I				SEQ ID NO.:20
CEF-167	E22	S	M	K	Y	N	L	I	V	D	S	P	Y				SEQ ID NO.:21
CEF-168	E23	wt															
CEF-169	E24	Q	M	P	I	R	N	Q	L	A	W	P	M				SEQ ID NO.:22
CEF-170	E25	T	Q	N	L	E	I	R	E	P	L	T	P				SEQ ID NO.:23
CEF-171	E26	Q	I	S	A	H	Q	M	P	S	R	P	I				SEQ ID NO.:20
CEF-172	E27	Y	P	M	S	P	S	P	Y	P	Y	Q	L				SEQ ID NO.:24
CEF-173	E28	S	F	M	I	Q	P	T	P	L	P	P	S				SEQ ID NO.:25
CEF-174	E29	G	L	A	P	H	I	H	S	L	N	E	A				SEQ ID NO.:26
CEF-175	E30	M	Q	F	P	V	T	P	Y	L	N	A	S				SEQ ID NO.:27

FIG. 6

**CdS Biopan 3 Sequences (N to C terminus)**

JCW-96	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-97	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-98	Q	I	S	A	H	Q	M	P	S	R	P	I	SEQ ID NO.:20
JCW-99	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-100	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-101	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-102	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-103	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-104	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-105	G	Y	H	M	Q	T	L	P	G	P	V	A	SEQ ID NO.:29

**CdS Biopan 4 Sequences (N to C terminus)**

JCW-106	S	L	T	P	L	T	T	S	H	L	R	S	SEQ ID NO.:30
JCW-108	S	L	T	P	L	T	T	S	H	L	R	S	SEQ ID NO.:30
JCW-111	S	L	T	P	L	T	T	S	H	L	R	S	SEQ ID NO.:30

**CdS Biopan 5 Sequences (N to C terminus)**

JCW-118	T	L	T	N	G	P	L	R	P	F	T	G	SEQ ID NO.:31
JCW-122	S	L	T	P	L	T	T	S	H	L	R	S	SEQ ID NO.:30

**CdS Biopan 3 Sequences (repeat; N to C terminus)**

JCW-125	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-126	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-127	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-128	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-129	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-130	S	L	T	P	L	T	T	S	H	L	R	S	SEQ ID NO.:30
JCW-131	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28

JCW-132 WT

JCW-133	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28
JCW-134	S	P	G	D	S	L	K	K	L	A	A	S	SEQ ID NO.:28

**CdS Biopan 2 Sequences (N to C terminus)**

JCW-137	S	L	T	P	L	T	T	S	H	L	R	S	SEQ ID NO.:30
JCW-139	S	L	T	P	L	T	T	S	H	L	R	S	SEQ ID NO.:30
JCW-140	S	L	T	P	L	T	T	S	H	L	R	S	SEQ ID NO.:30
JCW-141	S	L	T	P	L	T	T	S	H	L	R	S	SEQ ID NO.:30

**CdS Biopan 5 Sequences (repeat; N to C terminus)**

JCW-146	T	L	T	N	G	P	L	R	P	F	T	G	SEQ ID NO.:31
JCW-148	L	N	T	P	K	P	F	T	L	G	Q	N	SEQ ID NO.:32

FIG. 7

Other arrangements (N to C terminus)

4	B71	CEF-215	C	D	L	Q	N	Y	K	A	C	SEQ ID NO.:33
4	G	CEF-156	C	R	H	P	H	T	R	L	C	SEQ ID NO.:34
3t	H13	CEF-131	C	A	N	L	K	P	K	A	C	SEQ ID NO.:35
3t	H15	CEF-133	C	Y	I	N	P	P	K	V	C	SEQ ID NO.:36
3t	H14	CEF-132	C	N	N	K	V	P	V	L	C	SEQ ID NO.:37
3	B49	CEF-203	C	H	A	S	K	T	P	L	C	SEQ ID NO.:38
3t	H2	CEF-120	C	A	S	Q	L	Y	P	A	C	SEQ ID NO.:39
3	G4	CEF-102	C	N	M	T	Q	Y	P	A	C	SEQ ID NO.:40
3t	H17	CEF-135	C	F	A	P	S	G	P	A	C	SEQ ID NO.:41
4		B20	C	P	V	W	I	Q	A	P	C	SEQ ID NO.:42
5	CEF-27	B29	C	Q	V	A	V	N	P	L	C	SEQ ID NO.:43
3	G2	CEF-100	C	Q	P	E	A	M	P	A	C	SEQ ID NO.:44
3	B48	CEF-202	C	H	P	T	M	P	L	A	C	SEQ ID NO.:45
3a	B92	CEF-229	C	P	P	F	A	A	P	I	C	SEQ ID NO.:46

his-met-pro sequences from Aldrich ZnS screenings

3a	B63	CEF-	C	N	K	H	Q	P	M	H	C	SEQ ID NO.:47
4		B18	C	F	P	M	R	S	N	Q	C	SEQ ID NO.:48
4a	B73	CEF-	C	Q	S	M	P	H	N	R	C	SEQ ID NO.:49
5		B7	C	N	N	P	M	H	Q	N	C	SEQ ID NO.:50
5	CEF-	B30	C	Q	S	M	P	H	N	R	C	SEQ ID NO.:49
5	CEF-	B36	C	H	M	A	P	R	W	Q	C	SEQ ID NO.:51
5	CEF-	B37	C	Q	S	M	P	H	N	R	C	SEQ ID NO.:49
	JCW-	503	H	V	H	I	H	S	R	P	M	SEQ ID NO.:52
	JCW-	503	H	V	H	I	H	S	R	P	M	SEQ ID NO.:52
5	JCW-	5H7	L	P	N	M	H	P	L	P	L	SEQ ID NO.:53
4	JCW-	4H9	L	P	L	R	L	P	P	M	P	SEQ ID NO.:54
4	JCW-	437-10	H	S	M	I	G	T	P	T	T	SEQ ID NO.:55
4	JCW-	437-8	S	V	S	V	G	M	K	P	S	SEQ ID NO.:56
4	JCW-	437-1	L	D	A	S	F	M	Q	D	W	SEQ ID NO.:57
4	JCW-	437-2	T	P	P	S	Y	Q	M	A	M	SEQ ID NO.:58
4	JCW-	437-3	Y	P	Q	L	V	S	M	S	T	SEQ ID NO.:59
3	JCW-3	337-3	G	Y	S	T	I	N	M	Y	S	SEQ ID NO.:60
5	CEF-	Z35	S	V	S	V	G	M	K	P	S	SEQ ID NO.:56
5	CEF-6	Z30	D	R	M	L	L	P	F	N	L	SEQ ID NO.:61
5	CEF-3	Z27	I	P	M	T	P	S	Y	D	S	SEQ ID NO.:62
5		Z22	M	Y	S	P	R	P	P	A	L	SEQ ID NO.:63
5		Z23	Q	P	T	T	D	L	M	A	H	SEQ ID NO.:64
5		Z15	A	T	H	V	Q	M	A	W	A	SEQ ID NO.:65
5		Z9	S	M	H	A	T	L	T	P	M	SEQ ID NO.:66
5		Z10	S	G	P	A	H	G	M	F	A	SEQ ID NO.:67
2		Z4	I	A	N	R	P	Y	S	A	Q	SEQ ID NO.:68
		C16	V	M	T	Q	P	T	R			SEQ ID NO.:69
		C10	H	M	R	P	L	S	I			SEQ ID NO.:70

FIG. 8



**ZnS capping:**

BP5 Z6

L	T	R	S	P	L	H	V	D	Q	R	R
---	---	---	---	---	---	---	---	---	---	---	---

SEQ ID NO.:71

Z8

V	I	S	N	H	A	E	S	S	R	R	L
---	---	---	---	---	---	---	---	---	---	---	---

SEQ ID NO.:72

Z10

S	G	P	A	H	G	M	F	A	R	P	L
---	---	---	---	---	---	---	---	---	---	---	---

SEQ ID NO.:67

**ZnS 12-mer repeats**

5 JCW-44 537-4

S	V	S	V	G	M	K	P	S	P	R	P
---	---	---	---	---	---	---	---	---	---	---	---

SEQ ID NO.:56

4 JCW-28 437-8

S	V	S	V	G	M	K	P	S	P	R	P
---	---	---	---	---	---	---	---	---	---	---	---

SEQ ID NO.:56

5 CEF-11 Z35

S	V	S	V	G	M	K	P	S	P	R	P
---	---	---	---	---	---	---	---	---	---	---	---

SEQ ID NO.:56

**CdS contamination**

1 CEF-83 E3

C	H	A	S	N	R	L	S	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.: 12

**PbS 7-mer repeats 7C**

4a JCW-72 P74-4

H	T	H	I	P	N	Q
---	---	---	---	---	---	---

SEQ ID NO.:73

4 JCW-74 P74-6

H	T	H	I	P	N	Q
---	---	---	---	---	---	---

SEQ ID NO.:73

5 JCW-76 P75-2

L	A	P	V	S	P	P
---	---	---	---	---	---	---

SEQ ID NO.:74

5 JCW-78 P75-4

L	A	P	V	S	P	P
---	---	---	---	---	---	---

SEQ ID NO.:74

**7C repeats**

B73 CEF-217

C	Q	S	M	P	H	N	R	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:49

5 CEF-35 B37

C	Q	S	M	P	H	N	R	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:49

5 CEF-28 B30

C	Q	S	M	P	H	N	R	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:49

3t G5 CEF-103

C	M	T	A	G	K	N	T	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:75

3t G7 CEF-105

C	Q	T	L	W	R	N	S	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:76

3a B93 CEF-230

C	T	S	V	H	T	N	T	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:77

5 CEF-30 B32

C	T	S	V	H	T	N	T	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:77

4a B72 CEF-216

C	P	S	L	A	M	N	S	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:78

5 CEF-23 B25

C	P	S	L	A	M	N	S	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:78

5 CEF-33 B35

C	S	N	N	T	V	H	A	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:79

5 CEF-25 B27

C	S	N	N	T	V	H	A	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:79

5 CEF-37 B39

C	L	P	A	Q	G	H	V	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:80

5 CEF-29 B31

C	L	P	A	Q	V	H	V	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:81

5 CEF-22 B24

C	L	P	A	Q	G	H	V	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:80

3a B96 CEF-234

C	P	P	K	N	V	R	L	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:82

4 G CEF-158

C	P	H	I	N	A	H	A	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:83

4 G CEF-149

C	I	V	N	L	A	R	A	C
---	---	---	---	---	---	---	---	---

SEQ ID NO.:84

FIG. 9

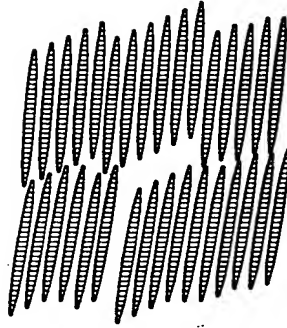
**Biopan 4 Lead Sulfide**

JCW-154	T	M	G	F	T	A	P	R	F	P	H	Y	SEQ ID NO.:85
JCW-155	A	T	Q	S	Y	V	R	H	P	S	L	G	SEQ ID NO.:86
JCW-156	T	S	T	T	Q	G	A	L	A	Y	L	F	SEQ ID NO.:87
JCW-157	D	P	P	W	S	A	I	V	R	H	R	D	SEQ ID NO.:88
JCW-158	F	D	N	K	P	F	L	R	V	A	S	E	SEQ ID NO.:89
JCW-159	H	Q	S	H	T	Q	Q	N	K	R	H	L	SEQ ID NO.:90
JCW-160	T	S	T	T	Q	G	A	L	A	Y	L	F	SEQ ID NO.:91
JCW-161	K	T	P	I	H	T	S	A	W	E	F	Q	SEQ ID NO.:92
JCW-162	D	P	P	W	S	A	I	V	R	H	R	D	SEQ ID NO.:88
JCW-163	T	M	G	F	T	A	P	R	F	R	H	Y	SEQ ID NO.:85

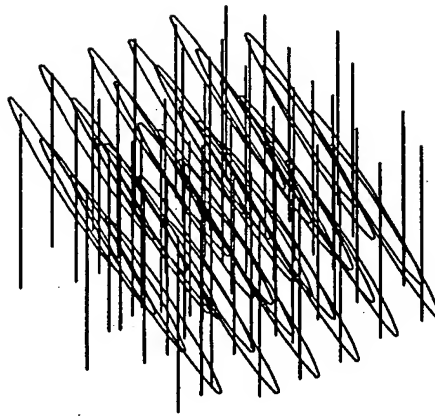
**Biopan 5 Lead Sulfide**

JCW-164	T	M	G	F	T	A	P	R	F	P	H	Y	SEQ ID NO.:85
JCW-165	T	M	G	F	T	A	P	R	F	P	H	Y	SEQ ID NO.:85
JCW-166	D	L	F	H	L	K	P	V	S	N	E	K	SEQ ID NO.:93
JCW-167	T	M	G	F	T	A	P	R	F	P	H	Y	SEQ ID NO.:85
JCW-168	D	P	P	W	S	A	I	V	R	H	R	D	SEQ ID NO.:88
JCW-169	K	P	F	W	T	S	S	P	D	V	M	T	SEQ ID NO.:94
JCW-170	D	P	P	W	S	A	I	V	R	H	R	D	SEQ ID NO.:88
JCW-171	P	W	A	A	T	S	K	P	P	Y	S	S	SEQ ID NO.:95
JCW-172	T	M	G	F	T	A	P	R	F	P	H	Y	SEQ ID NO.:85
JCW-173	T	M	G	F	T	A	P	R	F	P	H	Y	SEQ ID NO.:85

FIG. 10



*FIG. 11 A*



*FIG. 11 B*

FIG. 12A

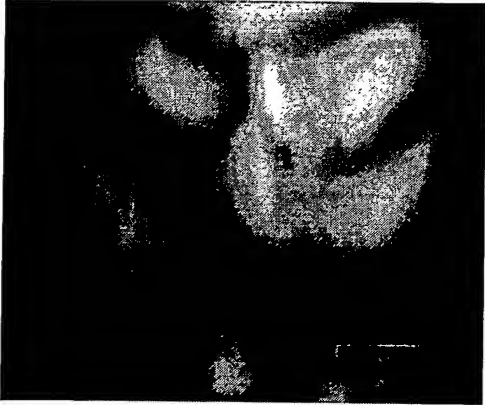


FIG. 12B

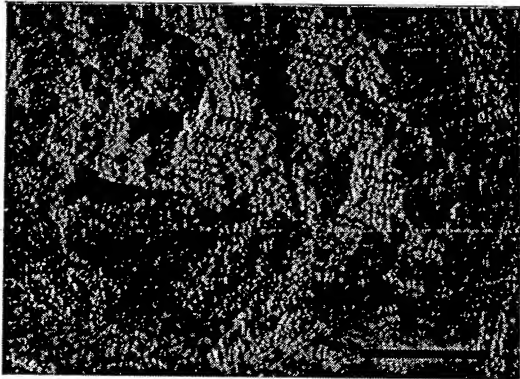
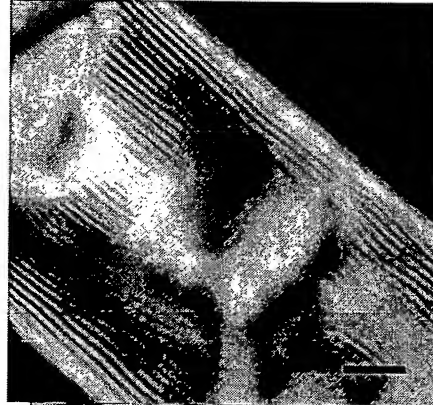


FIG. 12C

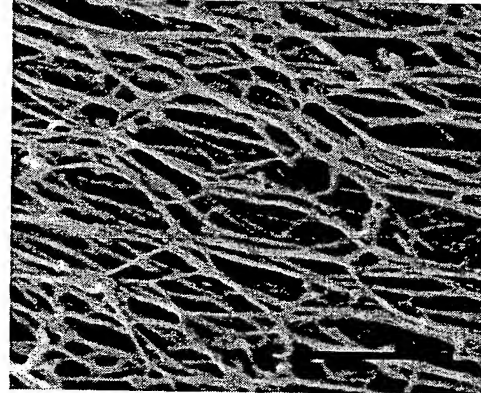


FIG. 12D

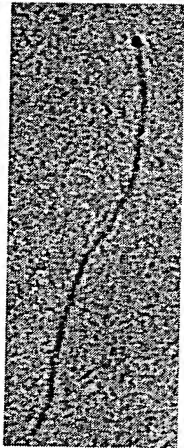


FIG. 12E

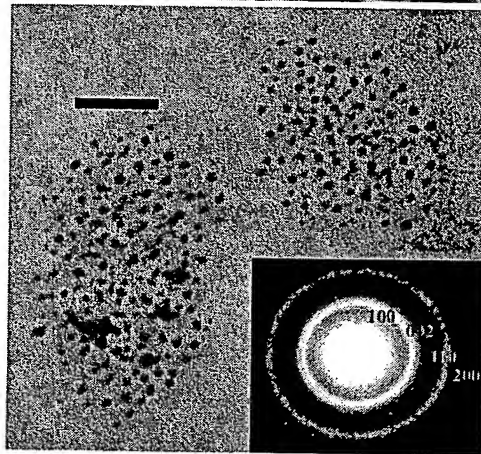


FIG. 12F

FIG. 13A

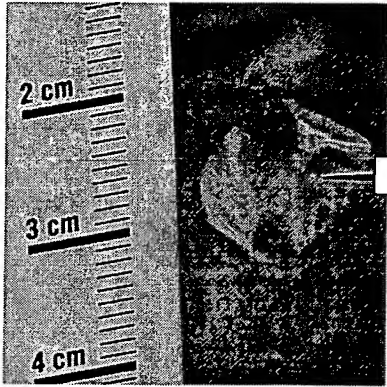


FIG. 13B

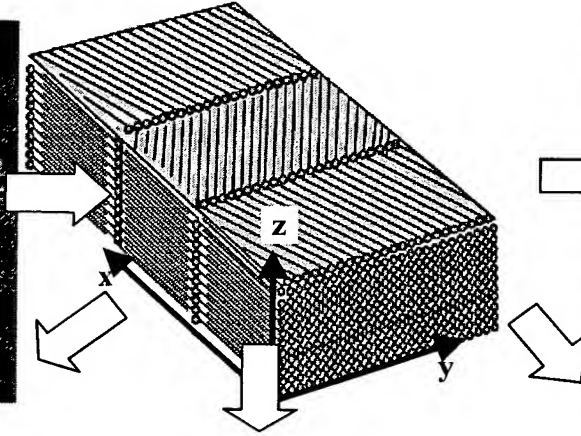


FIG. 13C

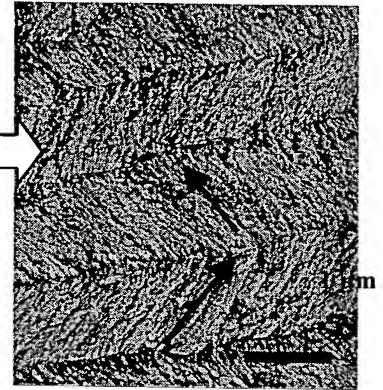


FIG. 13D



FIG. 13E

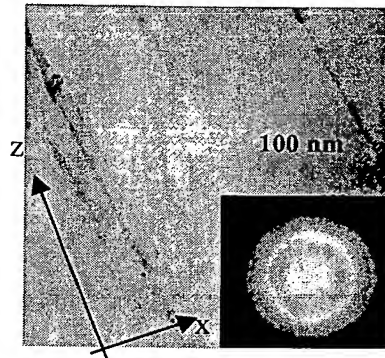
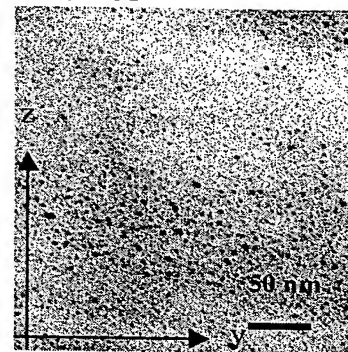


FIG. 13F



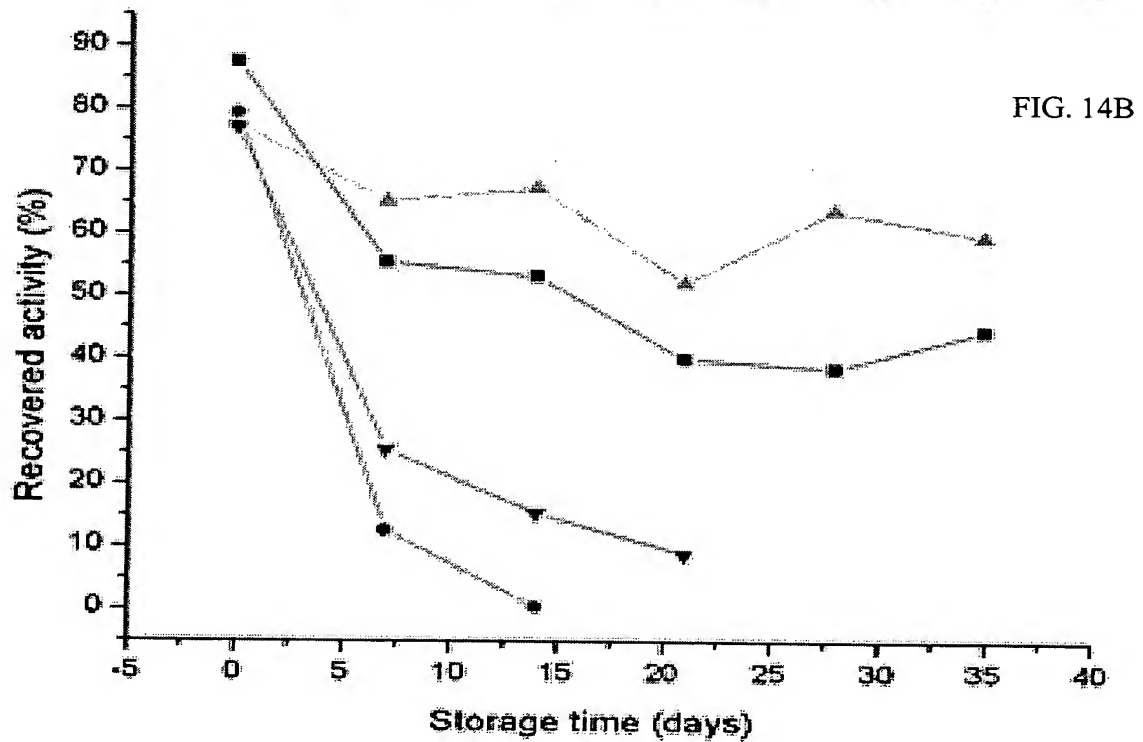
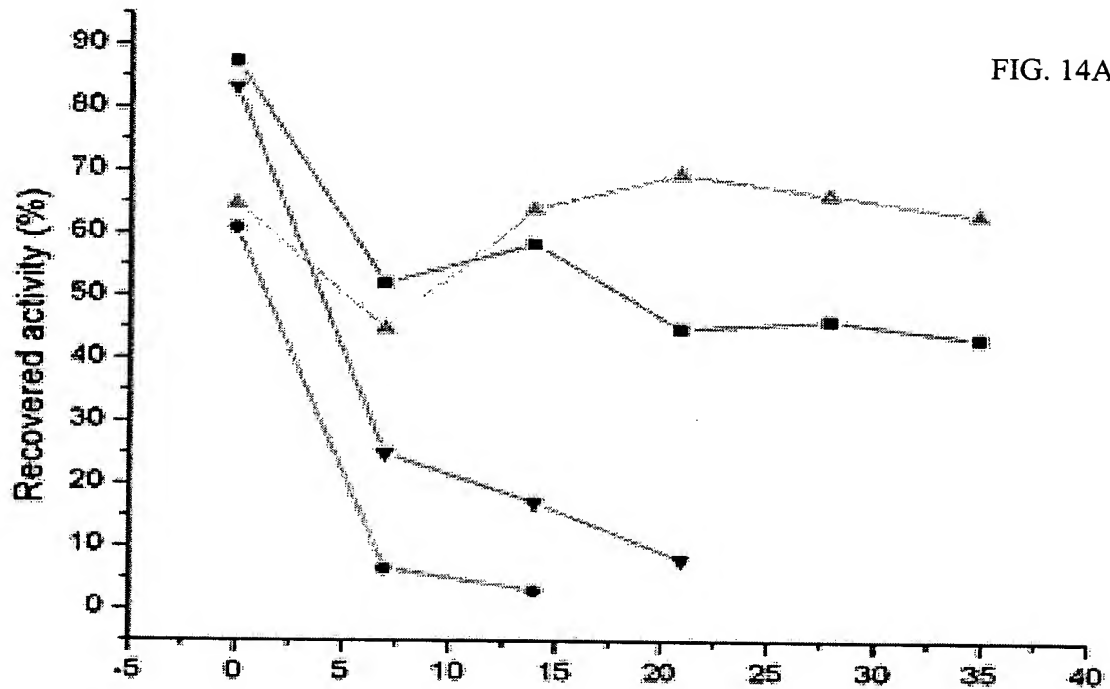


FIG. 15A

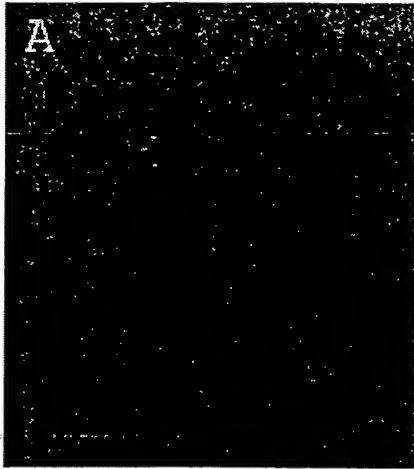


FIG. 15B

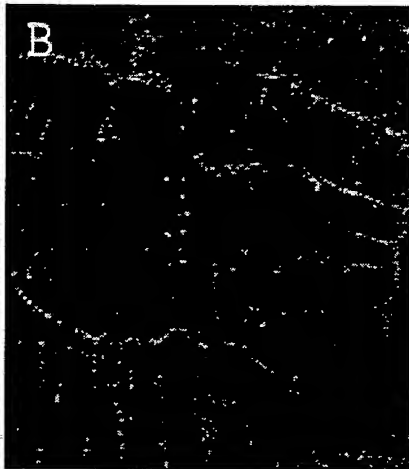
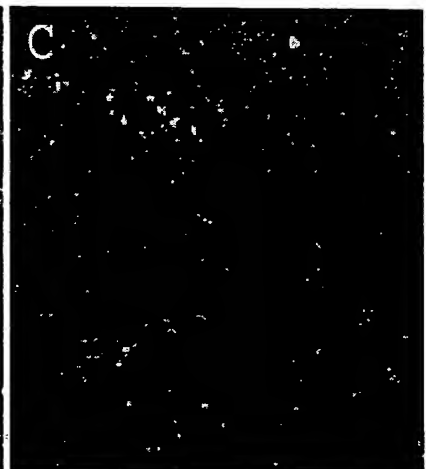


FIG. 15C



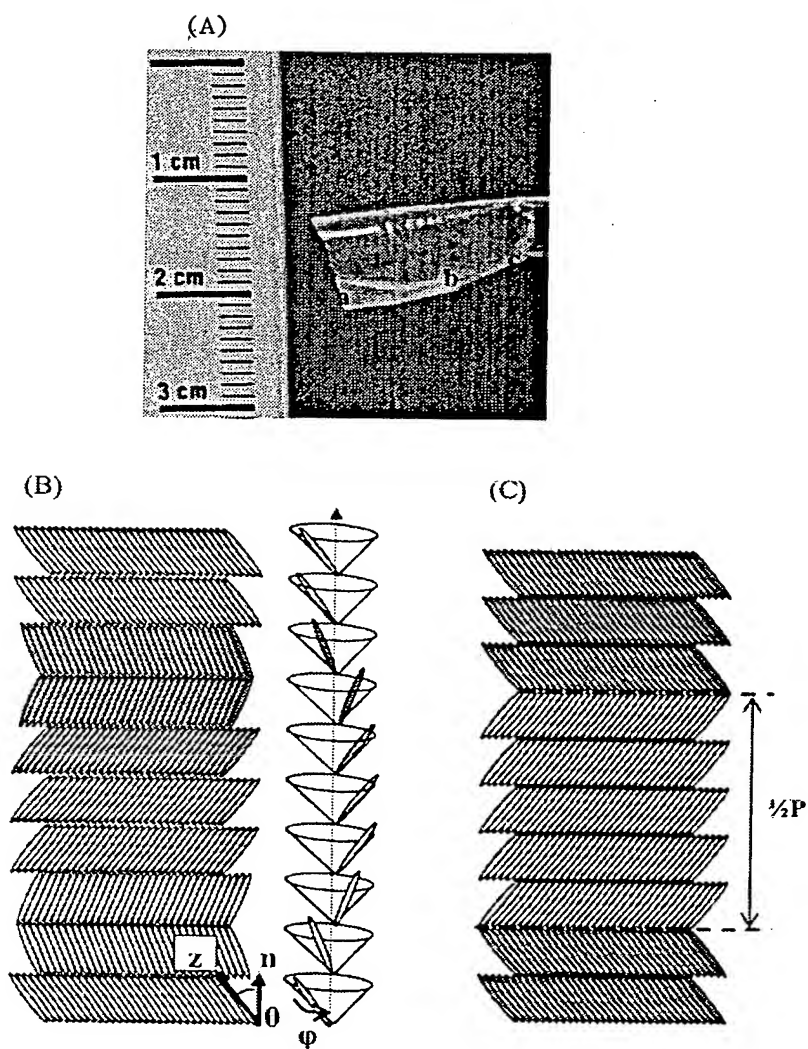


FIG. 16



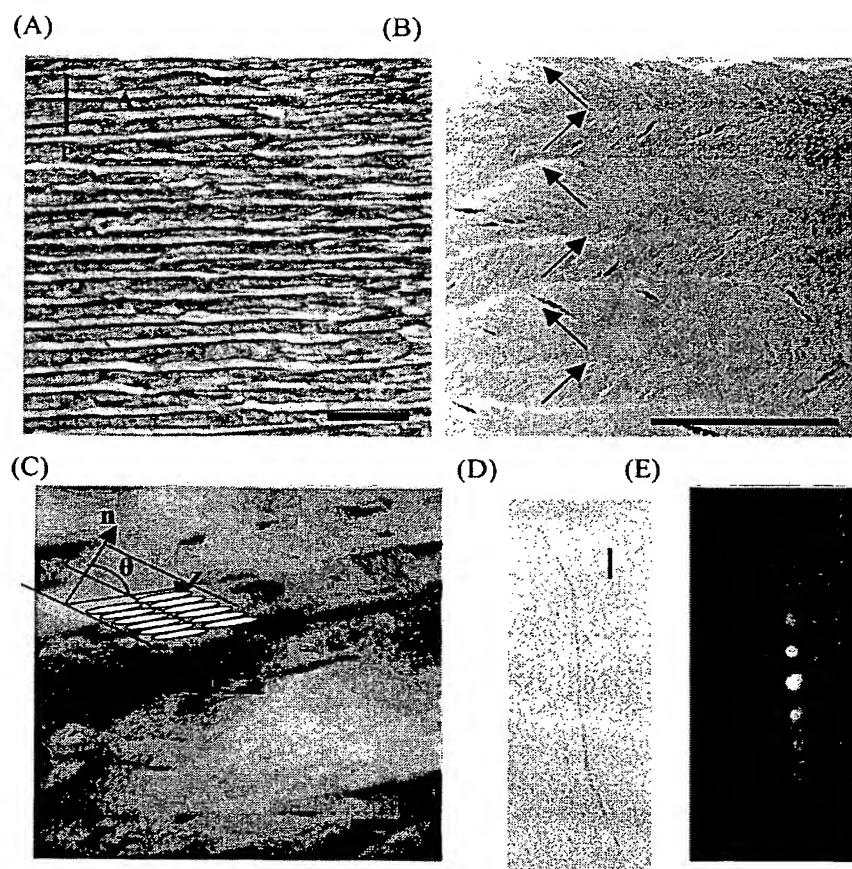
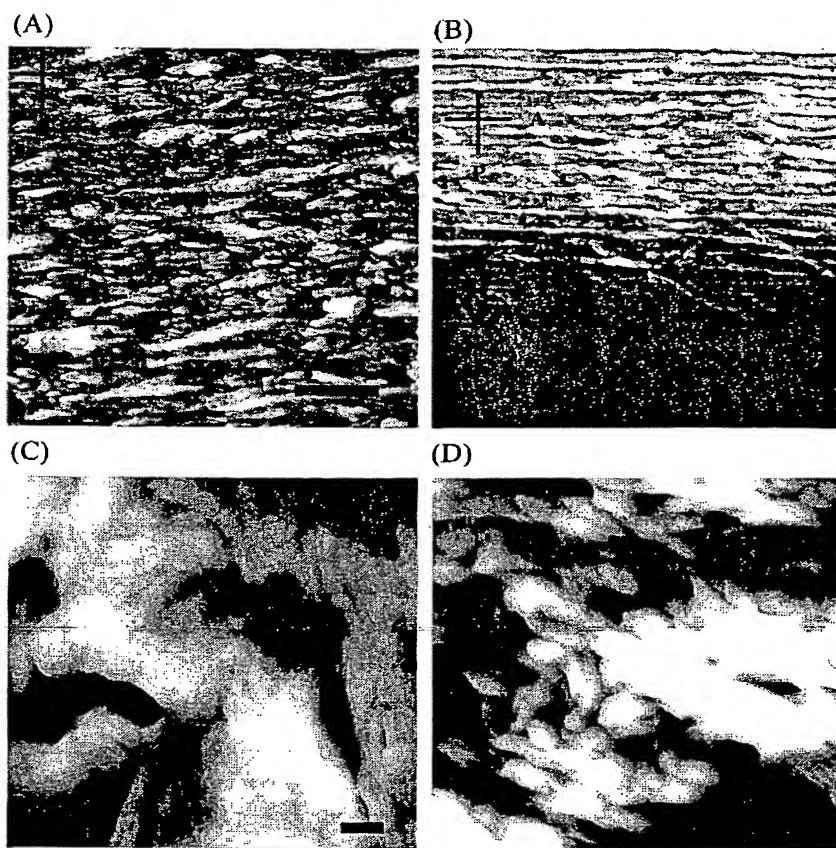
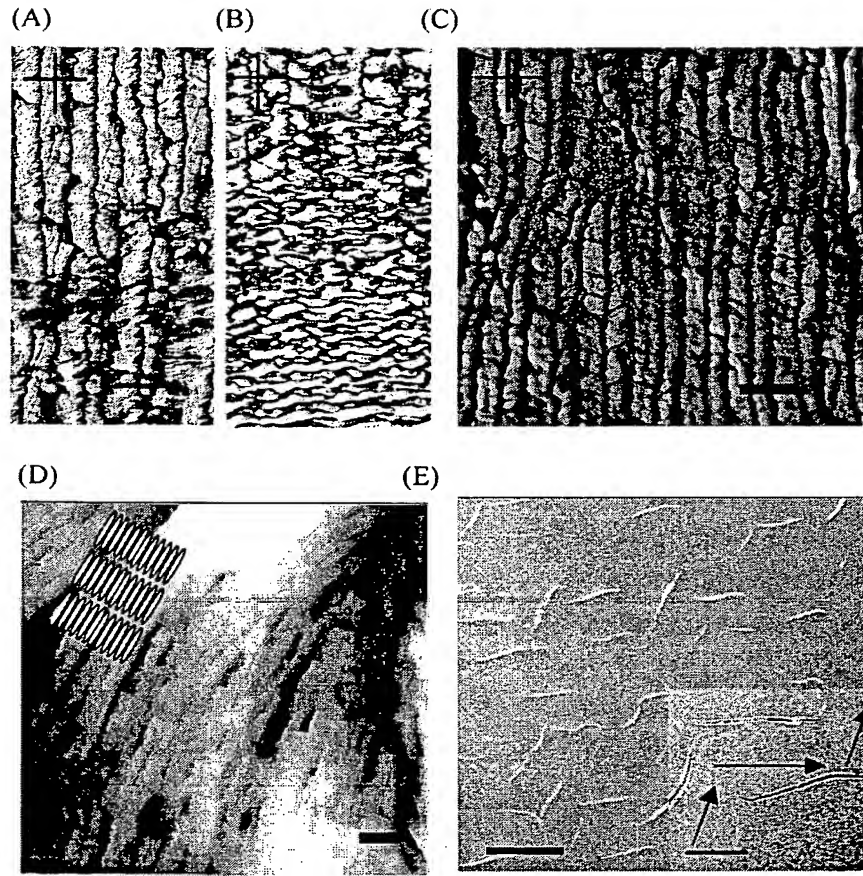


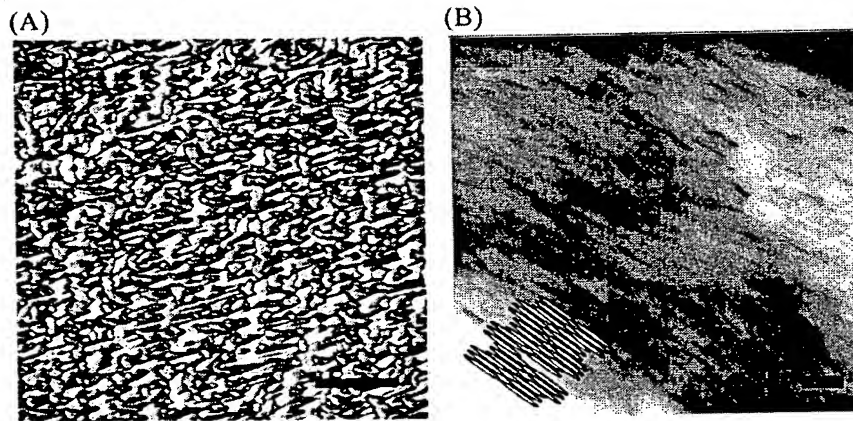
FIG. 17



**FIG. 18**



**FIG. 19**



**FIG. 20**

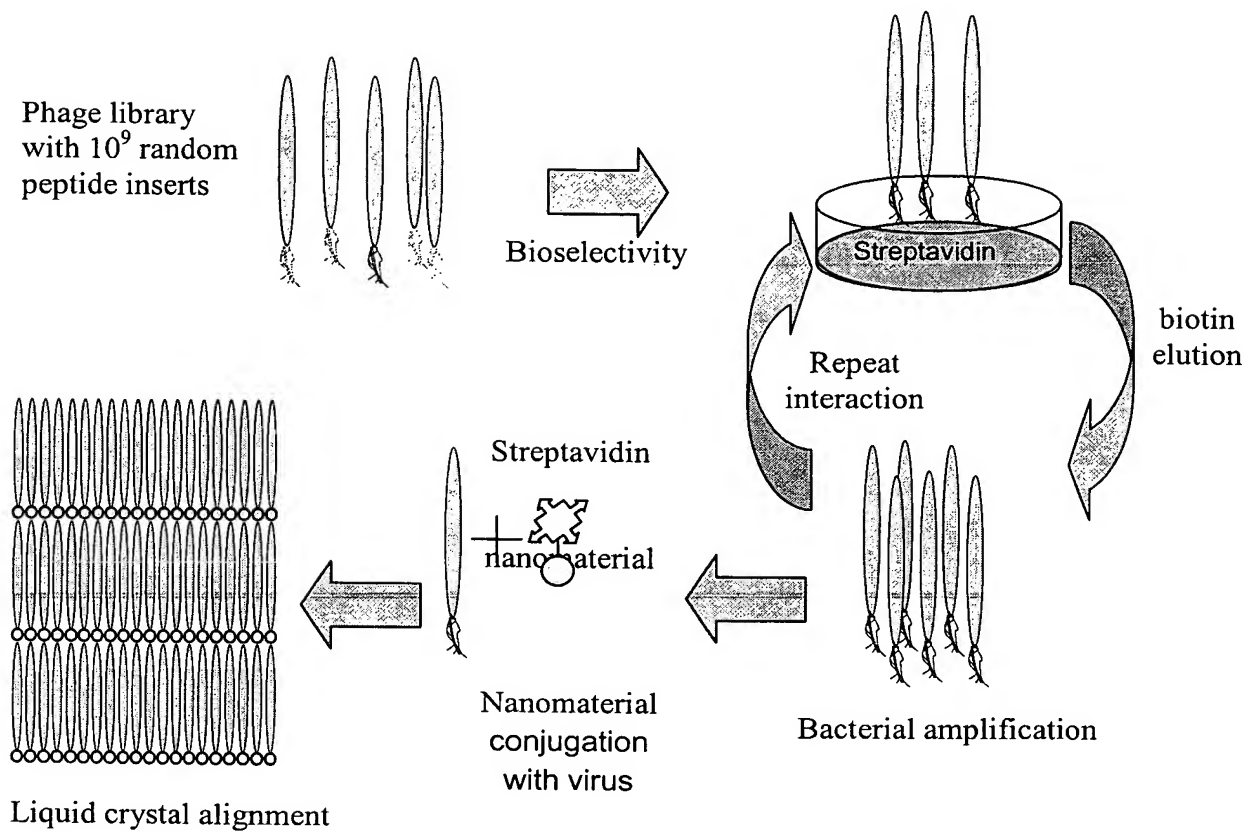
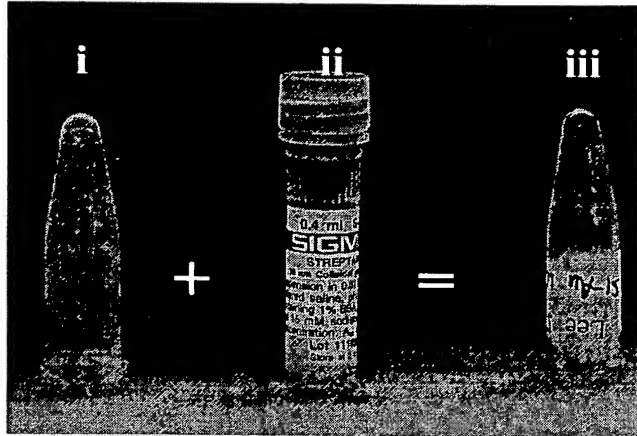
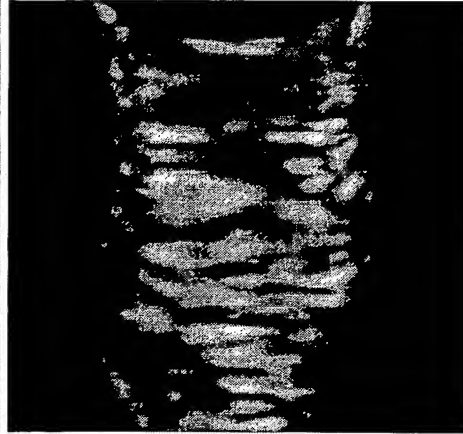


FIG. 21

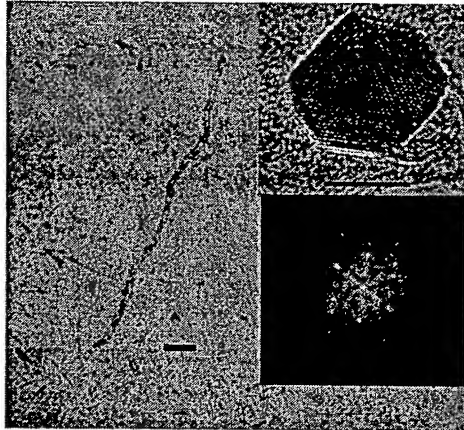
(A)



(B)



(C)



(D)

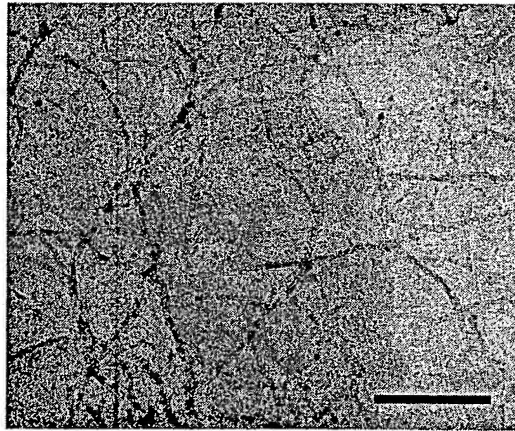
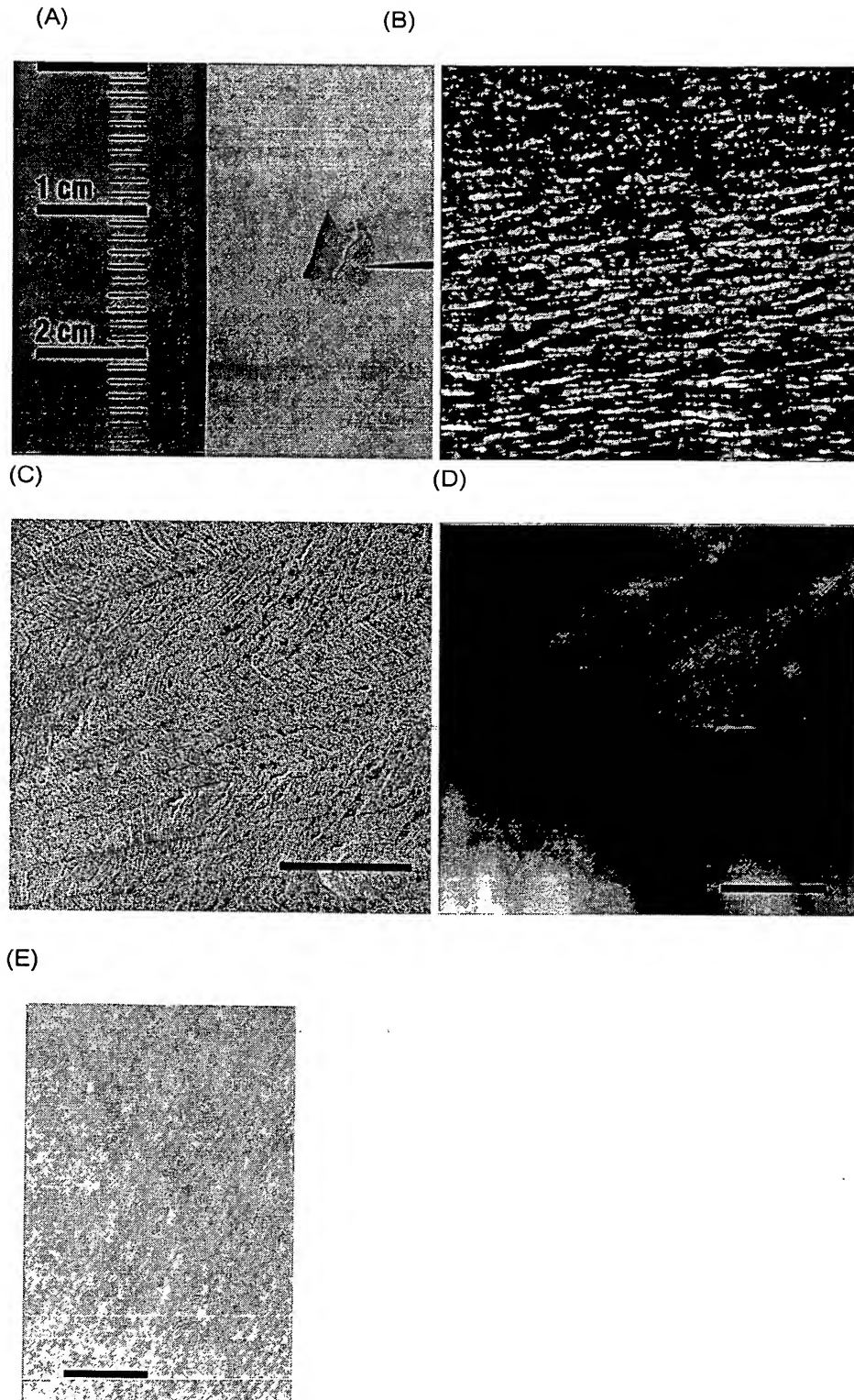
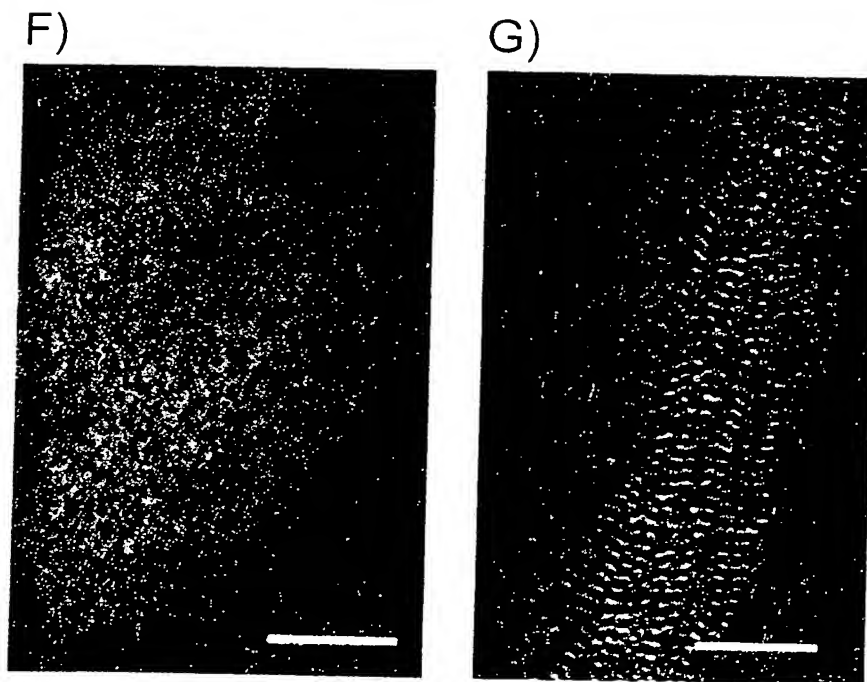


FIG. 22



**FIG. 23**



**FIG. 23**